



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,051	01/31/2002	Li-Shiuan Peh	100110288-1	3926

7590 03/20/2006

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER
----------

PATEL, SHAMBHAVI K

ART UNIT	PAPER NUMBER
----------	--------------

2128

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/066,051	<b>Applicant(s)</b> PEH ET AL.	
	<b>Examiner</b> Shambhavi Patel	<b>Art Unit</b> 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>06/05/05</u>  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

Claims 1-13, and 15-28 are pending. Claim 14 has been cancelled.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 05/12/2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-13, and 15-24 have been considered but are moot in view of the new grounds of rejection.

As per the applicant's specification, communication requirements of an interconnect fabric may be characterized in terms of a set of flow requirements, and the design of an interconnect fabric usually involves selecting the appropriate arrangement of physical communication links and interconnect devices and related components that will meet the flow requirements (applicant's specification: page 1, lines 20-26).

Datta discloses a network capacity evaluation and planning tool. After measuring the traffic across links in the network, simulated changes to the network configuration are made by substituting simulated traffic volume and capabilities (Datta: column 6 lines 55-61). The traffic volumes that are substituted into the network is analogous to the flow requirements claimed by

Art Unit: 2128

the applicant. Datta also discloses the selection of appropriate arrangement of physical communication links and interconnect devices and related components that will meet the flow requirements (Datta: column 12 lines 47-53).

The examiner's original rejection regarding claims 2-3, 15-16, and 18-19 is withdrawn. The claims now stand rejected under 35 U.S.C. 103(a) as being anticipated by Datta et al (US Patent No. 6,209,033) in view of Shahoumian et al. ("Storage Area Network Fabric Design", November 2000).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**2. Claims 1-24, 26, and 28** are rejected under 35 U.S.C. 103(a) as being obvious over *Datta et al* (US Patent No. 6,209,033), herein referred to as Datta, in view of *Shahoumian et al.* ("Storage Area Network Fabric Design", November 2000), herein referred to as Shahoumian.

As per **claim 1**, Datta is directed to a computer implemented method for generating an interconnect fabric design problem specification, the problem specification including requirements for a plurality of flows among a set of network nodes (column 6 lines 55-61) and

Art Unit: 2128

the problem specification suitable for application of a design technique by which physical communication links and communication devices are arranged to meet the flow requirements (column 12 lines 47-53), the method comprising selecting, from among the set of network nodes, a source node and destination node (column 2 lines 25-29), determining a maximum capacity available at the selected source node and the selected terminal node (column 3 lines 1-10, 24-35), and generating the flow having a capacity less than or equal to the lower of the maximum capacity of the source node and the terminal node (column 6 lines 33-61). Datta discloses repeating the above steps until all configurations are tested (figure 6: steps 63 and 64 are repeated).

Datta fails to disclose a problem specification that requires adding more flows than there are ports to a node.

Shahoumian et al. discloses network specifications that add more flows than there are ports to a node (page 3 slides 5-6).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Datta and Shahoumian in order to develop a design method that is not tedious, time-consuming, or error-prone (Shahoumian: page 1 slide 6).

As per **claims 2 and 3**, the combination of Datta and Shahoumian as applied to claim 1 above teaches determining the maximum capacity of each node by considering each port, along with port saturation and unused port capacity. Datta calculates the maximum capacity of the node (Datta: column 8 lines 61-67; column 13 lines 27-49). Datta does not disclose examining each port individually to determine the maximum capacity, but it would have been obvious that

Art Unit: 2128

in order to measure the capacity of a single node, the capacity of each of the ports on the node must be considered. Without measuring the capacity of the individual ports, the capacity of the whole node cannot be correctly determined.

As per **claims 4 and 5**, the combination of Datta and Shahoumian as applied to claim 1 above teaches the method according to claim 1, further comprising repeating said selecting, said determining, and said generation until a stop condition is repeated (column 3 lines 1-10). Datta tests all the links present in the network, so the stop condition is reached when all existent connections between the source nodes and destination nodes are evaluated. The links are assigned flows according to the specified substitutions to be made (Datta: column 6 lines 55-61).

As per **claim 6**, the combination of Datta and Shahoumian as applied to claim 5 above teaches the method according to claim 5, wherein said set of network nodes comprises a cluster of nodes and wherein the design problem includes a plurality of clusters (Datta: column 2 lines 12-16).

As per **claim 7**, the combination of Datta and Shahoumian as applied to claim 6 above teaches the method according to claim 6, wherein the design problem includes at least one flow between a pair of clusters (Datta: column 2 lines 12-16; Figure 8).

As per **claim 8**, the combination of Datta and Shahoumian as applied to claim 7 above teaches the method according to claim 7, wherein the design problem further comprises at least

Art Unit: 2128

one node not in the clusters having a flow to a node in the clusters (Datta: column 2 lines 12-16; Figure 8).

As per **claims 9 and 10**, the combination of Datta and Shahoumian as applied to claim 1 above teaches the method according to claim 1, further comprising generating an additional flow and determining whether to add the flow to the design problem according to a specified probability (Datta: column 6 lines 33-61). New links are added to the network, and the network is then simulated to see if the changes are preferable. If there is a high probability that the changes will negatively affect the network, or if this causes the bandwidth to exceed its maximum, the changes can be discarded.

As per **claims 11 and 12**, the combination of Datta and Shahoumian as applied to claim 1 above teaches the method according to claim 1, wherein the flow is assigned to a sign port or split among multiple ports (Datta: column 12 lines 47-56).

As per **claim 13**, the combination of Datta and Shahoumian discloses all of the elements of the claim as discussed above in the rejection of claim 1.

As per **claim 15 and 16**, the combination of Datta and Shahoumian discloses all of the elements of the claim as discussed above in the rejections of claims 2 and 3.

Art Unit: 2128

As per **claims 17 and 18**, the combination of Datta and Shahoumian discloses all of the elements of the claim as discussed above in the rejection of claims 4 and 5.

As per **claim 19**, the combination of Datta and Shahoumian as applied to claim 16 above teaches the system according to claim 16 wherein the stop condition is based on the bandwidth levels of the flow requirements (Datta: column 13 lines 14-26).

As per **claims 20-24**, the combination of Datta and Shahoumian discloses all of the elements of the claim as discussed above in the rejections of claims 6-10.

As per **claim 26**, the combination of Datta and Shahoumian as applied to claim 1 above teaches the method according to claim 1, wherein the capacity available at a node is reduced by the capacity of each flow assigned to the node (Datta: column 8 lines 51-60).

As per **claim 28**, the combination of Datta and Shahoumian discloses all of the elements of the claim as discussed above in the rejection of claim 26.

**3. Claims 25 and 27** are rejected under 35 U.S.C. 103(a) as being obvious over *Datta et al* (US Patent No. 6,209,033), herein referred to as Datta, in view of *Shahoumian et al.* ("Storage Area Network Fabric Design", November 2000), herein referred to as Shahoumian, and in further view of *Kamath et al.* ("Routing and Admission Control in General Topoplofy Networks with Poisson Arrivals), herein referred to as Kamath.



As per **claims 25 and 27**, the combination of Datta and Shahoumian fail to disclose assigning the input and output flow for a node randomly.

Kamath teaches assigning a random flow into a source node that follows the demand and capacity requirements for the source node (Kamath: page 275 "Thereom 3.6").

At the time of the invention, it would have been obvious to combine the teachings of Datta, Shahoumian, and Kamath because assigning the flow randomly to a node results in a more realistic model (Kamath: "Abstract", paragraph 3).

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2128

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shambhavi Patel whose telephone number is 571 272 5877. The examiner can normally be reached on 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shambhavi Patel  
Examiner  
Art Unit 2128

SP

  
KAMINI SHAH  
SUPERVISORY PATENT EXAMINER